

WHAT IS CLAIMED IS:

1 1. A non-naturally occurring seed plant, the plant comprising:
2 a first ectopically expressed polynucleotide encoding an *APETALA1* gene
3 product at least 50% identical to SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6 or SEQ ID
4 NO:8 or a *CAULIFLOWER* gene product at least 50% identical to SEQ ID NO:10 or SEQ ID
5 NO:12; and
6 a second ectopically expressed nucleic acid molecule encoding a *SEP1* gene
7 product at least 50% identical to SEQ ID NO:28, a *SEP2* gene product at least 50% identical
8 to SEQ ID NO:30, a *SEP3* gene product at least 50% identical to SEQ ID NO:32 or an
9 *AGL24* gene product at least 50% identical to SEQ ID NO:38.

1 2. The non-naturally occurring seed plant of claim 1, which is
2 characterized by early reproductive development.

1 3. The non-naturally occurring seed plant of claim 1, wherein expression
2 of the first ectopically expressed polynucleotide is increased in a tissue of a plant compared
3 to a wild type plant.

1 4. The non-naturally occurring seed plant of claim 1, wherein expression
2 of the second ectopically expressed polynucleotide is increased in a tissue of a plant
3 compared to a wild type plant.

1 5. The non-naturally occurring seed plant of claim 1, wherein expression
2 of the first ectopically expressed polynucleotide is decreased in a tissue of a plant compared
3 to a wild type plant.

1 6. The non-naturally occurring seed plant of claim 1, wherein expression
2 of the second ectopically expressed polynucleotide is decreased in a tissue of a plant
3 compared to a wild type plant.

1 7. The non-naturally occurring seed plant of claim 1, comprising an
2 endogenous first ectopically expressed polynucleotide comprising a modified gene regulatory
3 element.

1 8. The non-naturally occurring seed plant of claim 1, comprising an
2 endogenous second ectopically expressed polynucleotide comprising a modified gene
3 regulatory element.

1 9. The non-naturally occurring seed plant of claim 1, wherein the non-
2 naturally occurring seed plant is a transgenic plant comprising a first exogenous gene
3 regulatory element operably linked to the first ectopically expressible polynucleotide and a
4 second exogenous gene regulatory element operably linked to the second ectopically
5 expressible polynucleotide.

1 10. The non-naturally occurring seed plant of claim 9, wherein the first
2 polynucleotide is operably linked to the first exogenous gene regulatory element in a sense
3 orientation.

1 11. The non-naturally occurring seed plant of claim 9, wherein the first
2 polynucleotide is operably linked to the first exogenous gene regulatory element in an
3 antisense orientation.

1 12. The non-naturally occurring seed plant of claim 9, wherein the second
2 polynucleotide is operably linked to the second exogenous gene regulatory element in a sense
3 orientation.

1 13. The non-naturally occurring seed plant of claim 9, wherein the second
2 polynucleotide is operably linked to the second exogenous gene regulatory element in an
3 antisense orientation.

1 14. The non-naturally occurring seed plant of claim 1, wherein the first
2 ectopically expressed polynucleotide encodes an *APETALA1* gene product at least 50%
3 identical to a polypeptide selected from the group comprising SEQ ID NO:2, SEQ ID NO:4,
4 SEQ ID NO:6 and SEQ ID NO:8.

1 15. The non-naturally occurring seed plant of claim 14, wherein the first
2 ectopically expressed polynucleotide encodes an *APETALA1* gene product comprising a
3 polypeptide selected from the group consisting of SEQ ID NO:2, SEQ ID NO:4, SEQ ID
4 NO:6 and SEQ ID NO:8.

1 16. The non-naturally occurring seed plant of claim 15, wherein the first
2 ectopically expressed polynucleotide encodes SEQ ID NO:2.

1 17. The non-naturally occurring seed plant of claim 15, wherein the first
2 ectopically expressed polynucleotide encodes SEQ ID NO:4.

1 18. The non-naturally occurring seed plant of claim 15, wherein the first
2 ectopically expressed polynucleotide encodes SEQ ID NO:6.

1 19. The non-naturally occurring seed plant of claim 15, wherein the first
2 ectopically expressed polynucleotide encodes SEQ ID NO:8.

1 20. The non-naturally occurring seed plant of claim 1, wherein the first
2 ectopically expressed polynucleotide encodes a *CAULIFLOWER* gene product at least 50%
3 identical to a polypeptide selected from the group consisting of SEQ ID NO:10 and SEQ ID
4 NO:12.

1 21. The non-naturally occurring seed plant of claim 20, wherein the first
2 ectopically expressed polynucleotide is a *CAULIFLOWER* gene product comprising a
3 polypeptide selected from the group consisting of SEQ ID NO:10 and SEQ ID NO:12.

1 22. The non-naturally occurring seed plant of claim 21, wherein the first
2 ectopically expressed polynucleotide encodes SEQ ID NO:10.

1 23. The non-naturally occurring seed plant of claim 21, wherein the first
2 ectopically expressed polynucleotide encodes SEQ ID NO:12.

1 24. The non-naturally occurring seed plant of claim 1, wherein the second
2 ectopically expressed polynucleotide encodes an *SEP1* gene product at least 50% identical to
3 SEQ ID NO:28.

1 25. The non-naturally occurring seed plant of claim 24, wherein the second
2 ectopically expressed polynucleotide is an *SEP1* gene product comprising SEQ ID NO:28.

1 26. The non-naturally occurring seed plant of claim 1, wherein the second
2 ectopically expressed polynucleotide encodes an *SEP2* gene product at least 50% identical to
3 SEQ ID NO:30.

1 27. The non-naturally occurring seed plant of claim 26, wherein the second
2 ectopically expressed polynucleotide is an *SEP2* gene product comprising SEQ ID NO:30.

1 28. The non-naturally occurring seed plant of claim 1, wherein the second
2 ectopically expressed polynucleotide encodes an *SEP3* gene product at least 50% identical to
3 SEQ ID NO:32.

1 29. The non-naturally occurring seed plant of claim 28, wherein the second
2 ectopically expressed polynucleotide is an *SEP3* gene product comprising SEQ ID NO:32.

1 30. The non-naturally occurring seed plant of claim 1, wherein the second
2 ectopically expressed polynucleotide is an *AGL24* gene product at least 50% identical to SEQ
3 ID NO:38.

1 31. The non-naturally occurring seed plant of claim 30, wherein the second
2 ectopically expressed polynucleotide is an *AGL24* gene product comprising SEQ ID NO:38.

1 32. A method of modulating the timing of reproductive development in a
2 plant, the method comprising,

3 ectopically expressing a first polynucleotide encoding an *APETALA1* gene
4 product at least 50% identical to SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6 or SEQ ID
5 NO:8 or a *CAULIFLOWER* gene product at least 50% identical to SEQ ID NO:10 or SEQ ID
6 NO:12; and

7 ectopically expressing a second nucleic acid molecule encoding a *SEP1* gene
8 product at least 50% identical to SEQ ID NO:28, a *SEP2* gene product at least 50% identical
9 to SEQ ID NO:30, a *SEP3* gene product at least 50% identical to SEQ ID NO:32 or an
10 *AGL24* gene product at least 50% identical to SEQ ID NO:38.

1 33. The method of claim 32 comprising,

2 introducing a first ectopically expressed nucleic acid molecule comprising a
3 first polynucleotide encoding an *APETALA1* gene product at least 50% identical to SEQ ID
4 NO:2, SEQ ID NO:4, SEQ ID NO:6 or SEQ ID NO:8 or a *CAULIFLOWER* gene product at
5 least 50% identical to SEQ ID NO:10 or SEQ ID NO:12; and

6 introducing a second ectopically expressed nucleic acid molecule comprising a
7 second polynucleotide encoding a *SEP1* gene product at least 50% identical to SEQ ID

8 NO:28, a *SEP2* gene product at least 50% identical to SEQ ID NO:30, a *SEP3* gene product
9 at least 50% identical to SEQ ID NO:32 or an *AGL24* gene product at least 50% identical to
10 SEQ ID NO:38.

1 34. The method of claim 33, wherein the first and second ectopically
2 expressed nucleic acid molecules each comprise a gene regulatory element operably linked to
3 the first and second polynucleotides.

1 35. The method of claim 34, wherein the first polynucleotide is operably
2 linked to the gene regulatory element in a sense orientation.

1 36. The method of claim 34, wherein the first polynucleotide is operably
2 linked to the gene regulatory element in an antisense orientation.

1 37. The method of claim 34, wherein the second polynucleotide is
2 operably linked to the gene regulatory element in a sense orientation.

1 38. The method of claim 34, wherein the second polynucleotide is
2 operably linked to the gene regulatory element in an antisense orientation.

1 39. The method of claim 33, wherein expression of the first polynucleotide
2 is increased in a tissue of the plant compared to a wildtype plant.

1 40. The method of claim 33, wherein expression of the first polynucleotide
2 is decreased in a tissue of the plant compared to a wildtype plant.

1 41. The method of claim 33, wherein expression of the second
2 polynucleotide is increased in a tissue of the plant compared to a wildtype plant.

1 42. The method of claim 33, wherein expression of the second
2 polynucleotide is decreased in a tissue of the plant compared to a wildtype plant.

1 43. The method of claim 34, wherein the gene regulatory element is
2 constitutive.

1 44. The method of claim 34, wherein the gene regulatory element is
2 inducible.

1 45. The method of claim 34, wherein the gene regulatory element is tissue-
2 specific.

1 46. The method of claim 32, wherein the timing of reproductive
2 development is early compared to a wild type plant grown under the same conditions.

1 47. The method of claim 32, wherein the timing of reproductive
2 development is late compared to a wild type plant grown under the same conditions.

1 48. The method of claim 33, wherein the first ectopically expressed
2 polynucleotide is an *APETALA1* gene product is at least 50% identical to a polypeptide
3 selected from the group consisting of SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6 or SEQ
4 ID NO:8.

1 49. The method of claim 48, wherein the first ectopically expressed
2 polynucleotide is an *APETALA1* gene product comprises a polypeptide selected from the
3 group consisting of SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6 and SEQ ID NO:8.

1 50. The method of claim 49, wherein the first ectopically expressed
2 polynucleotide encodes SEQ ID NO:2.

1 51. The method of claim 49, wherein the first ectopically expressed
2 polynucleotide encodes SEQ ID NO:4.

1 52. The method of claim 49, wherein the first ectopically expressed
2 polynucleotide encodes SEQ ID NO:6.

1 53. The method of claim 49, wherein the first ectopically expressed
2 polynucleotide encodes SEQ ID NO:8.

1 54. The method of claim 33, wherein the first ectopically expressed
2 polynucleotide is a *CAULIFLOWER* gene product is at least 50% identical to a polypeptide
3 selected from the group consisting of SEQ ID NO:10 and SEQ ID NO:12.

1 55. The method of claim 54, wherein the first ectopically expressed
2 polynucleotide is a *CAULIFLOWER* gene product comprises a polypeptide selected from the
3 group consisting of SEQ ID NO:10 and SEQ ID NO:12.

1 56. The method of claim 54, wherein the first ectopically expressed
2 polynucleotide encodes SEQ ID NO:10.

1 57. The method of claim 54, wherein the first ectopically expressed
2 polynucleotide encodes SEQ ID NO:10.

1 58. The method of claim 33, wherein the second ectopically expressed
2 polynucleotide is an *SEP1* gene product is at least 50% identical to SEQ ID NO:28.

1 59. The method of claim 58, wherein the second ectopically expressed
2 polynucleotide is an *SEP1* gene product comprising SEQ ID NO:28.

1 60. The method of claim 33, wherein the second ectopically expressed
2 polynucleotide is an *SEP2* gene product is at least 50% identical to SEQ ID NO:30.

1 61. The method of claim 60, wherein the second ectopically expressed
2 polynucleotide is an *SEP2* gene product comprises SEQ ID NO:30.

1 62. The method of claim 33, wherein the second ectopically expressed
2 polynucleotide is an *SEP3* gene product is at least 50% identical to SEQ ID NO:32.

1 63. The method of claim 62, wherein the second ectopically expressed
2 polynucleotide is an *SEP3* gene product comprises SEQ ID NO:32.

1 64. The method of claim 33, wherein the second ectopically expressed
2 polynucleotide is an *AGL24* gene product is at least 50% identical to SEQ ID NO:38.

1 65. The method of claim 64, wherein the second ectopically expressed
2 polynucleotide is an *AGL24* gene product comprises SEQ ID NO:38.